UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 10-11571-RWZ

SKYHOOK WIRELESS, INC.

v.

GOOGLE, INC.

MEMORANDUM OF DECISION

March 6, 2014

ZOBEL, D.J.

Plaintiff Skyhook Wireless, Inc., alleges that defendant Google, Inc., has infringed nine patents. Defendant has moved for partial summary judgment of invalidity for indefiniteness on six claims of U.S. Patent Nos. 7,856,234 ("the '234 Patent"); 8,019,357 ("the '357 Patent"); 8,022,877 ("the '877 Patent"); and 8,229,455 ("the '455 Patent") (Docket # 240). See 35 U.S.C. § 112 ¶ 2. The parties further disagree on the proper construction of sixteen claim terms and whether fourteen claim preambles are limiting (Docket ## 235, 245).[1]

I. Background

Plaintiff filed its first suit against defendant on September 15, 2010 (Docket # 1), alleging infringement of four patents: 7,414,988 ("the '988 patent"); 7,433,694 ("the '694

[1]In their Joint Claim Construction and Prehearing Statement (Docket # 249-2), the parties stipulated to the proper construction of fourteen additional terms.

patent"); 7,474,897 ("the '897 patent"); and 7,305,245 ("the '245 patent") ("the Skyhook I patents"). I construed the disputed terms of the Skyhook I patents and held the '988 and '245 patents invalid for indefiniteness (Docket # 96). Plaintiff filed a new action on September 20, 2012, in the United States District Court for the District of Delaware, alleging infringement of nine additional patents.[2] That action was transferred to this court, and I allowed the parties' joint motion to consolidate the cases (Docket # 157).

Broadly outlined, the technology in these cases pertains to the determination and use of Wi-Fi access points ("AP") to ascertain the location of a device with a Wi-Fi radio (e.g., a phone or a tablet), also known as a Wireless Local Area Network-enabled ("WLAN") device. A Wi-Fi AP, also referred to as a WLAN AP, allows an electronic device to connect to the Internet or exchange data wirelessly using radio waves. Each Wi-Fi AP has its own unique identifier, known as a medium access control ("MAC") address. Vehicles equipped with scanning technology collect Wi-Fi AP locations and store them in a reference database. A WLAN-enabled device receives Wi-Fi AP signals, identifies them, compares them with the APs stored in the reference database, and then computes the location of the device. Device owners use that location information for many purposes, including navigation and social networking.

The '234 and '357 Patents, which use the same specification, claim a method of estimating the expected error of a wireless device's prediction of its location. The patents in the '877 family ('877, '074, '960, and '454) claim systems and methods of

[2]They are: 7,856,234 ("the '234 patent"); 8,019,357 ("the '357 patent"); 8,022,877 ("the '877 patent"); 8,154,454 ("the '454 patent"); 8,223,074 ("the '074 patent"); 8,242,960 ("the '960 patent"); 8,229,455 ("the '455 patent"); 8,054,219 ("the '219 patent"); 8,031,657 ("the '657 patent").

detecting whether wireless APs have moved by using WLAN-based and satellite-based technologies. The '657 Patent claims a method of receiving multiple readings of a wireless AP, excluding erroneous readings, and producing an updated location of that AP. The '219 Patent claims a method of using a WLAN-based location prediction as an initial location for a satellite positioning system. Finally, the '455 Patent claims a method of storing wireless AP information in the memory of a particular wireless device.

II. Legal Standards

A. Claim Construction

The construction of patent claims is a legal matter for the court to decide. Markman v. Westview Instruments, Inc., 517 U.S. 370, 372 (1996). "[T]he words of a claim 'are generally given their ordinary and customary meaning,'" Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed Cir. 1996)), which "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." Id. at 1313. "[C]laims 'must be read in view of the specification, of which they are a part.'" Id. at 1315 (quoting Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "Idiosyncratic language, highly technical terms, or terms coined by the inventor are best understood by reference to the specification." Intervet Inc. v. Merial Ltd., 617 F.3d 1282, 1287 (Fed. Cir. 2010). The court may also supplement its understanding by consulting the prosecution history, if in evidence. Id.

B. Indefiniteness

A patent's specification "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor . . . regards as the invention." 35 U.S.C. § 112(b). "[T]he purpose of the definiteness requirement is to ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee's right to exclude." Datamize, L.L.C. v. Plumtree Software, Inc., 417 F.3d 1342, 1347 (Fed. Cir. 2005). Indefiniteness is a question of law. Exxon Research & Eng'g Co. v. United States, 265 F.3d 1371, 1376 (Fed. Cir. 2001). "A claim is indefinite only when it is not amenable to construction or insolubly ambiguous." Biosig Instruments, Inc. v. Nautilus, Inc., 715 F.3d 891, 898 (Fed Cir. 2013) (internal quotation and citation omitted), cert. granted, 82 U.S.L.W. 3195 (U.S. Jan. 10, 2014) (No. 13-369).

C. Summary Judgment

Summary judgment will be granted if there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(a). The court must view the record in the light most favorable to the nonmovant and draw all justifiable inferences in that party's favor. Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255 (1986).

III. Analysis

All told, thirty-six claim terms across nine patents remain in dispute (Docket # 169). After holding a Markman hearing and reviewing the evidence, I rule on defendant's motion and construction of the disputed claim terms as follows.

A. Summary Judgment

1. "relative accuracy of the position estimate"

Term	Court's Construction
"relative accuracy of the position estimate" ('234/1,18; '357/1,19)	"a measure of the correctness of the position estimate, based on expected error, derived from comparing other estimates of expected error of one or more WLAN access points"

Defendant argues this term is indefinite because "the specification does not explain to what the accuracy of the estimate is 'relative.'" Def.'s Opening Br., Docket # 235, at 7. The specification, however, discloses that it is "relative to" the estimated expected errors that other position estimates generate. The specification states that "[t]he expected error of a WLAN position estimate may be used to quantify the quality of the position estimate." '234 Patent col.4 ll.28-29. It then discusses instances in which multiple position estimates are combined and in which position estimates with comparatively high estimated expected error are excluded when deriving the mobile device's speed of travel or bearing. Id. col.4 ll.29-62. Given these repeated references to comparing and combining estimated expected error rates, a person with ordinary skill in the art would understand the disputed term to mean relative to other estimated expected error rates. See Howmedica Osteonics Corp. v. Tranquil Prospects, Ltd., 401 F.3d 1367, 1371 (Fed. Cir. 2005) (a claim is not indefinite when its meaning can be ascertained from the specification).

2. "estimated characteristic(s)"

Term	Court's Construction
"estimated characteristic(s)" ('357/1,2,6,19,24)	Indefinite under 35 U.S.C. § 112 ¶ 2

Defendant contends "estimated characteristics" is indefinite because the specification does not explain what "estimated characteristics" are or how they are estimated. Def.'s Opening Br. at 9. Alternatively, it argues that if "estimated characteristics" can be construed, the term refers to characteristics that are "not directly measured or detected." Id. Plaintiff disagrees and argues that "estimated characteristics" are simply "attributes of the access points as determined by the client device," whether they are computed or directly detected. Pl.'s Opening Br., Docket # 217, at 9.

The claim language does not help construe the disputed term. Claim 2 of the '357 Patent describes an "estimated characteristic" as "at least one of received signal strength, estimated geographic location, and signal coverage area." '357 Patent col.9 ll.50-52. The parties agree that "received signal strength" is a known and directly detected property. See Def.'s Reply Br., Docket # 248-1, at 8; Deposition of David Kotz, Docket # 246-3, at 95. They also agree that "signal coverage area" is an estimated, calculated property. Def.'s Reply Br., Docket # 248-1, at 8; Declaration of David Kotz, Docket # 216, at ¶ 55. Claim 2 thus labels both estimated and non-estimated properties as "estimated characteristics." But if a non-estimated property can be "estimated" according to the language of the patent, the word "estimated" has no meaning. It is therefore superfluous. See Merck & Co. v. Teva Pharms. USA, Inc., 395 F.3d 1364,

1372 (Fed. Cir. 2005) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so."); Power Mosfet Techs., L.L.C. v. Siemens AG, 378 F.3d 1396, 1410 (Fed. Cir. 2004) (same).

Nor does the specification provide any insight into the proper construction. The specification does not use the term at all, and instead refers to properties of WLAN APs as "signals characteristics," '357 Patent col.4 ll.18-19, or simply as "characteristics." Id. col.5 ll.36-37. The parties' proposed constructions only add to the confusion. Plaintiff defines "estimated characteristics" as "properties of access points" and includes in its construction two known, detected properties, received signal strength and the MAC address, thereby reading "estimated" out of the term. See Pl.'s Opening Br. at 9. Defendant, while arguing that detected properties are not "estimated characteristics," inexplicably includes the very same two detected properties in its proposed alternative construction. Def.'s Opening Br. at 8.

In short, the claim term contains superfluous language, the specification adds nothing, and the parties offer deficient constructions. After a sustained effort to produce an intelligible construction, I conclude that "estimated characteristics" cannot be given a reasonable meaning and is therefore indefinite. See Datamize, 417 F.3d at 1347.

3. "aggregate statistics of [the] estimated characteristics of the plurality of WLAN access points"

Term	Court's Construction
"aggregate statistics of [the] estimated characteristics of the plurality of WLAN access points" ('357/6,24)	Indefinite under 35 U.S.C. § 112 ¶ 2

For the reasons discussed above, I conclude that "aggregate statistics of [the] estimated characteristics of the plurality of WLAN access points" is indefinite.

4. "aggregate statistics"

Term	Court's Construction
"aggregate statistics" ('357/6-8,24-26)	Indefinite under 35 U.S.C. § 112 ¶ 2

Claim 8 describes "aggregate statistics" as "at least one of received signal strength, estimated geographic location, signal coverage area, a spatial spread of distance between estimated geographic positions of the plurality of WLAN access points, and a count of the plurality of WLAN access points." '357 Patent col.10 ll.18-23. The problem with this list is that three items—received signal strength, estimated geographic location, and signal coverage area—are also described as "estimated characteristics" of WLAN APs in Claim 2. The patent does not explain how an "estimated characteristic" can also be an "aggregate statistic," and how, if at all, the terms are different. A second problem exists with the terms in Claim 8. A "statistic" is "a numerical datum." Webster's II New Riverside Univ. Dictionary 1134 (1984); see Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed. Cir. 2002) ("It has long been recognized in our precedent . . . that dictionaries . . . are particularly useful resources to assist the court in determining ordinary and customary meanings of claim terms."). But at least one term in Claim 8, "estimated geographic location," is not a statistic but a prediction of location. The claim language therefore describes as "aggregate statistics" properties which are (1) not, in fact, statistics; and (2) described

elsewhere in the claim language as something other than statistics. Claim language with such contradictions is insolubly ambiguous, and for that reason, I conclude "aggregate statistics" is indefinite.

5. "if the distance between the reference WLAN AP location and the SPS location solutions is far"

Term	Court's Construction
"if the distance between the reference WLAN AP location and the SPS location solutions is far" ('877/1,11)	Indefinite under 35 U.S.C. § 112 ¶ 2

"Far" is a word of degree, and "[d]efiniteness problems often arise when words of degree are used in a claim." Seattle Box Co. v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826 (Fed. Cir. 1984). That is the nature of the parties' disagreement on this term. Defendant contends the term is indefinite because the specification provides no standard for measuring what is and is not "far." Def.'s Opening Br. at 11-12; see Seattle Box Co., 731 F.2d at 826 ("When a word of degree is used the district court must determine whether the patent's specification provides some standard for measuring that degree.").[3] Plaintiff replies that the specification contains such a standard. Pl.'s Responsive Br., Docket # 245, at 23.

Satellite positioning systems are based on the concept of "trilateration," or "estimating a position on the basis of measurements of ranges to the satellites whose positions are known." '877 Patent col.2 ll.14-15. "The ranges to the satellites from a

[3]For this reason, plaintiff's citations to other cases which have found words of degree not indefinite miss the point. I must look to the patent language to determine whether the required standard exists.

receiver are measured in terms of the transit times of the signals." Id. col.2 ll.18-19. When there is a lack of synchronization between the satellite clock and the receiver (i.e., the user device) clock, "clock bias" exists. Id. col.2 ll.23-26. The consistency of the clock biases based on each satellite measurement can be used to measure the distance between the initial WLAN AP location and the satellite measurements. Id. col.7 ll.55-60. "If the inconsistency between the clock bias numbers found from the SPS equations for each satellite after applying the WLAN AP location is large, it is concluded that the WLAN AP has moved." Id. col.7 ll.60-64.

Critically, the '877 Patent states that "[a]ny statistical method to measure the spread of clock bias measurements can be used here." Id. col.7 ll.66-67. It elaborates on what constitutes a "large inconsistency" or a "far distance" in the following way:

> An example of a large inconsistency or a far distance can be in the order of hundreds of meters in [sic] case of standard deviation or if the distance is an order of magnitude larger than the coverage area of the WLAN AP. For example, if the coverage area of the WLAN AP is 100 meters, a far distance would be on the order of 1,000 meters. However, if the coverage area of the WLAN AP is 10 meters, a large distance would be 100 meters. Therefore, the determination of whether or not a distance is far depends on the coverage area of the access points being used for the location determination.

Id. col.8 ll.15-24. The language discusses two of the numerous methods available to measure distance or inconsistency. In one method, based on coverage area of the WLAN AP, the examples state that a distance ten times greater than the size of the coverage area of is "far" (or "large," as the second example phrases it). They are only examples, however, and the language refers to "*an* order of magnitude," without expressly stating its size. Id. (emphasis added). The same is true of cases utilizing

standard deviation; the specification gives only "[a]n example" of a large inconsistency: the rather imprecise "hundreds of meters." Id.

It is true that the specification need not contain an explicit numerical demarcation of "far" and "not far." See Modine Mfg. v. U.S. Int'l Trade Comm'n, 75 F.3d 1545, 1557 (Fed. Cir. 1996), abrogated on other grounds by Festo Corp. v. Shoketsu Kinzoku Koygo Kabushiki Co., 234 F.3d 558 (Fed. Cir. 2000). But it must "reasonably apprise those skilled in the art both of the utilization and scope of the invention." Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 624 (Fed. Cir. 1985) (internal quotation and citation omitted). By discussing only two available methods for measuring distance, and by substituting examples for the required "standard," the specification leaves the definition of "far" so open-ended as to leave a person skilled in the art to guess at the scope of the invention. I therefore conclude that the disputed term is indefinite.

6. "other access points"

Term	**Court's Construction**
"other access points" ('455/2)	No construction required

Defendant contends "other access points" is indefinite. The term "access points" is used extensively by both parties and has a commonly understood meaning in the art. The word "other" is also clear; it means "[d]ifferent from that or those specified or implied." Webster's II New Riverside Univ. Dictionary 832. Because these terms are well known, a person with ordinary skill in the art would understand their meaning. They

are not indefinite. See IGT v. Bally Gaming Int'l, 659 F.3d 1109, 1119 (Fed Cir. 2011) (concluding a term with a plain and ordinary meaning is not insolubly ambiguous).

B. Disputed Terms

1. "expected error [of a position estimate]"

Term	Court's Construction
"expected error [of a position estimate]" ('234/1,3,4,8,10-13,18; '357/1,5,6,11,19,23,24,29).	"A prediction of the relative accuracy in terms of distance, based on characteristics of the at least one access point used to estimate the position of the WLAN-enabed device."

The '234 and '357 patents claim a method comprising "estimating an expected error, in terms of distance, of the position estimate based on characteristics of the at least one WLAN access point used for estimating the position of the WLAN-enabled device." Plaintiff construes "expected error" to mean an outer boundary, expressed as a distance, within which the actual error is expected to fall. Defendant contends the term refers to the distance between the actual position and the calculated position of the WLAN-enabled device. Defendant confuses expected error with actual error. The specification describes several methods by which a WLAN-enabled device may calculate expected error and contrasts those methods with the calculation of actual error. Compare '234/'357 Patents col.6 ll.1-9 (using the smallest signal coverage area of the detected APs as the boundary of the estimate of expected error, as illustrated in Figure 2), with id. col.6 ll.24-26 ("The actual error can be determined by comparing the estimated position provided by the WLAN positioning system with a known position.").

In other words, expected error is a means of "quantify[ing] the quality of the position estimate," id. col.4 ll.28-29, rather than expressing the precise distance between the position estimate and the actual location of the device. The specification does not support defendant's construction.

2. "a spatial spread of the geographic positions of the access points" / "a spatial spread of distance between estimated geographic positions of the plurality of WLAN access points"

Term	Court's Construction
"a spatial spread of the geographic positions of the access points" / "a spatial spread of distance between estimated geographic positions of the plurality of WLAN access points" ('234/8; '357/8,26)	"A measure of the estimated distances between the geographic positions of the WLAN access points."

Defendant states that the "only dispute" regarding the definition of "spatial spread" is whether the measurement of distances between APs is estimated or exact. Def.'s Opening Br. at 19. Plaintiff concedes that it is estimated. Pl.'s Responsive Br. at 5. No further construction is necessary.

3. "characteristics of the at least one WLAN access point" / "characteristics from more than one WLAN access point"

Term	Court's Construction
"characteristics of the at least one WLAN access point" / "characteristics from more than one WLAN access point" ('234/1,3,18; '357/1,5,19,23)	"Properties of access points, including, for instance, MAC address, received signal strength (RSS), time differences of arrival (TDOA), and Time of Arrival (TOA), or signal coverage area."

The parties agree that "characteristics" are "properties of access points," but disagree about (1) whether characteristics are limited to those that can be detected

rather than calculated, and as a result, (2) whether "signal coverage area," which must be calculated, is a property of an AP. Defendant asserts that only detected properties may be characteristics; plaintiff contends the term is not so limited. Defendant supports its construction by identifying in the specification a list which contains only detected properties. See '234 Patent col.4 ll.16-22. Yet the specification states that the list to which defendant points is not exhaustive, id. col.4 l.19, and elsewhere, claim language referencing characteristics of APs makes no explicit or implicit distinction between detected and calculated properties. For example, Claim 2 of the '357 patent refers to "estimated geographic location" and "signal coverage area," which must be calculated, but also to "received signal strength," which is detected, as "estimated characteristics." '357 Patent, col.9 ll.50-52. Defendant's construction imports a distinction which the claim and specification language do not require.[4]

Extrinsic evidence provides further support for plaintiff's construction. A "characteristic" is "a distinguishing attribute or element." Webster's II New Riverside Univ. Dictionary 249. It makes little sense to conclude that only immediately observable properties are distinguishing attributes, but properties obtained through calculation are not. A person with ordinary skill in the art would understand that "characteristics of the at least one WLAN access point" refers to both detected and calculated properties of APs. Therefore, "signal coverage area," a calculated property, is properly treated as a WLAN AP characteristic.

[4]This is consistent with my construction of "estimated characteristics," *supra*, for although it makes sense to call a known, detected property a "characteristic," it is incorrect to refer to such a property as an "*estimated* characteristic."

4. "reference database"

Term	Court's Construction
"reference database" ('877/1-3,11; '454/1,5 6,13,17,18; '074/1,5,6,13,17,18); '960:1,4,5,12,15,16)	"collection of data that contains reference locations of a plurality of APs"

Claim 1 of the '877 Patent recites "[a] method of using a WLAN and satellite enabled device . . . to detect WLAN access points (APs) that have moved, the method comprising . . . accessing a reference database to obtain a reference location of each WLAN AP." '877 Patent col.14 ll.2-8. The parties' dispute pertains to what the "reference database" must contain. Plaintiff construes this term to mean a "collection of data that contains reference locations of a plurality of APs."[5] Pl.'s Opening Br. at 23. Defendant contends it means a "database containing known and calculated geographic locations and power profiles for all access points used in the WLAN-based positioning system." Def.'s Opening Br. at 20.

Defendant's construction inserts three limitations arising from a single example of a "conventional" WLAN-based positioning system in the '877 Patent's background. '877 Patent col. 2 l.54–col.3 l.16. But generally, "where claims can reasonably [be] interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence [to] the contrary." Oatey Co. v. IPS Corp., 514 F.3d 1271, 1277 (Fed. Cir. 2008). And indeed, the claim and

[5]The parties have stipulated that "reference location" means "a known or calculated location of a WLAN AP that is stored in the reference database." Docket # 249-2, at 1.

specification suggest defendant's limitations are misplaced. The claims that mention a "reference database"–'877 Patent claims 1-3, 11–only address an AP's "reference location," not its "power profile," suggesting a "reference database" need not contain a "power profile" for each AP. '877 Patent, col.14 ll.7-8, 60-61. Furthermore, the specification states that "[t]he reference database contains reference locations of a *plurality* of WLAN APs," id. col. 7 ll. 20-21 (emphasis added), instead of "all access points," as per defendant's construction. The ordinary meaning of "reference database" does not include the limitations that defendant's construction contains.

5. "possible SPS location solution(s)" / "possible Satellite Positioning System (SPS) location solution(s)"

Term	**Court's Construction**
"possible SPS location solution(s)" / "possible Satellite Positioning System (SPS) location solution(s)" ('877/1,11; '454/1,3,13,15; '074/1,3,13,15; '960/1,12)	"position estimates of a device generated using satellite data"

Defendant would require that "possible SPS location solution(s)" be limited to "a region of possible present locations estimated for the device by the SPS, before determination of a final position estimate." Def.'s Opening Br. at 22. The spatial and temporal limitations in its construction, however, read out an embodiment in the claims and specification—namely, when the device receives a single position estimate, or "GPS fix," because it has a clear line of sight to at least four satellites. See '877 Patent col.1 ll.55-60 ("A user equipped with a GPS receiver can estimate his three-dimensional position . . . within several meters of the true location as long as the receiver can see enough of the sky to have four or more satellites 'in view.'"). The claim and specification

contemplate the occurrence of a "GPS fix." Id. col.14 ll.9-10 (referencing "satellite measurements from at least two satellites"); col. 8 ll.25-30 (discussing the device's detection of AP movement "[w]hen a[n] SPS location estimate is available"). In other words, when a device receives a "GPS fix," it does not generate a "region of possible present locations," and does not do so "before a determination of a final position estimate." Defendant's construction improperly focuses on one embodiment to the exclusion of another. Oatey Co., 514 F.3d at 1277.

6. "estimated present location(s) of the associated WLAN AP(s)"

Term	**Court's Construction**
"estimated present location(s) of the associated WLAN AP(s)" ('454/6,18; '074/6,18); '960/5,16)	No further construction required.

When a WLAN- and satellite-enabled device determines that a reference location associated with a particular AP is not its present location, the device can update the estimated present location of that AP. The parties disagree about when this update must occur. Defendant contends it must happen at the very moment when the device infers that the reference location is incorrect. Def.'s Opening Br. at 24. Plaintiff says there is no such time limitation. Pl.'s Opening Br. at 31. The claim language contains no temporal restriction. And the specification merely says that the "position database can be updated accordingly" after the device determines that one or more APs have moved. '074 Patent col.7 l.29. For these reasons, no further construction of the term is necessary.

7. "aggregate reference location"

Term	Court's Construction
"aggregate reference location" ('454/1,13)	"estimated location representative of the cluster of APs"

The parties agree that an "aggregate reference location" is a single location for a "cluster" of WLAN APs, but unlike plaintiff, defendant contends this aggregate reference location must be calculated by "combining" reference locations. Def.'s Opening Br. at 25. The specification does not state that reference locations within a cluster must be "combined." It states only that the reference locations within a cluster "can be *used* to estimate the location of the mobile device." '454 Patent col.11 ll.29-30 (emphasis added). Elsewhere, it says the reference locations are "considered" to reach an estimated location. Id. col.11 l.39. Moreover, the claim language defines a cluster as having "at least one WLAN AP" in it, leaving open the possibility that a cluster could contain only one AP. Id. col.14 ll.20-21. In such a case, there would be no need to "combine" reference locations. Plaintiff's construction better captures the language of the patents, which permit broader methods of calculating an aggregate location from a cluster.

8. "an initial position"

Term	Court's Construction
"an initial position" ('219/1,4)	"a position estimate made before the satellite positioning system calculates a position estimate"

The specification provides that "[t]he receipt of an initial position is a standard practice in [satellite positioning systems ("SPS")], and most of the SPS receivers provide a method to receive the initial position. Here the WLAN-PS is used as the source of providing the initial position to [the] SPS." '219 Patent col.13 ll.48-51. Defendant contends that the "initial position" must "reduce[] the time for an SPS to determine a final position estimate." Def.'s Opening Br. at 16. The use of an "initial position" has several benefits, and a reduced time to "first fix" of the SPS is just one of them. See id. col.13 ll.16-31. The specification teaches that reduced power consumption from the WLAN- and satellite-enabled device and improved accuracy of positioning are two others. Id. col.6 ll.44-53. Defendant's construction improperly inserts into the claim language a benefit of the invention contained in the specification.[6] See Praxair, Inc. v. ATMI, Inc., 543 F.3d 1306, 1325 (Fed. Cir. 2008) (quoting E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1370 (Fed. Cir. 2003) (stating claim language should not be limited to encompassing all of an invention's purposes or benefits)).

9. "cooperate with a WLAN-based positioning system"

Term	**Court's Construction**
"cooperate with a WLAN-based positioning system" ('455/1)	"communicate with a WLAN-based positioning system using the device"

The parties disagree about whether "cooperate" means "work with," as plaintiff

[6]In its claim construction brief, defendant also purports to limit the use of a WLAN position estimate to "a *present* calculated location." Def.'s Opening Br. at 26. But again, the claim language simply does not say as much. Furthermore, defendant's own construction says nothing about "a present calculated location" and therefore does not appear to encompass the same limitation defendant sees in the disputed term.

contends, or means "communicate," as defendant contends. The claim and specification language support the latter construction. Claim 1 states that the "logic to cooperate" "provid[es] extracted and cached information" to the WLAN-based positioning system. '455 Patent col.14 ll.15-16. The specification recites that the information collected by the cooperating logic "is sent" to the wireless positioning system. Id. col.6 l.50. It is difficult to see how providing or sending information does not amount to communication. Plaintiff's construction is unsupported by the '455 Patent's language and is no less ambiguous than the term it seeks to construe.

Yet defendant once again seeks to import a limitation from the specification into the claim language in the requirement that the WLAN positioning system be implemented on a client-server based architecture. The specification expressly provides otherwise by stating that "the positioning system can be implemented on a client device with no server interaction." Id. col.6 ll.37-38. Defendant is not entitled to this limitation.

10. "movement information"

Term	**Court's Construction**
"movement information" ('455/1)	"information of historical movement of a device"

Plaintiff contends that "movement information" means "information regarding historical or potential future movement of a device." Pl.'s Opening Br. at 21. Defendant restricts the term to "position, velocity, and direction of travel." Def.'s Opening Br. at 29. The specification recites that the "history of detected APs *is used* to increase accuracy

of position, velocity, and direction of travel estimation." '455 Patent col.12 ll.40-41 (emphasis added). It does not state, as defendant argues, that "movement information" is defined by—and only by—these uses. At the same time, plaintiff's construction impermissibly broadens the definition of "movement information" by using "potential future movement" to define it. Prediction of future position is a use, not a definition, of "movement information." See id. col.12 ll.49-51 ("[T]he cached signal information *can be used* to predict a later position of [the] WPS-enabled device.") (emphasis added).

11. "considers the cached time information and movement information"

Term	**Court's Construction**
"considers the cached time information and movement information" ('455/1)	"takes into account the information indicating the time of reception of the signals transmitted by the corresponding WLAN AP(s) and the movement information"

The parties dispute the meaning of "considers." Plaintiff contends it means "takes into account;" defendant asserts it means "processes." Pl.'s Opening Br. at 17; Def.'s Opening Br. at 30. Plaintiff is correct. The ordinary meaning of "consider" is "[t]o think about seriously" or "[t]o take into account." Webster's II New Riverside Univ. Dictionary 301. Defendant cites no language to support a departure from this ordinary meaning. See Phillips, 415 F.3d at 1314 ("In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.").

The parties also disagree about the meaning of "cached time information." Defendant claims it means "time tags;" plaintiff responds that defendant's construction is too narrow. Def.'s Opening Br. at 30-31; Pl.'s Opening Br. at 17-18. Despite arguing vigorously in support of its respective position, neither party explains what "time information" and "time tags" mean, and what, if anything, is the difference between the two terms. Defendant points to the specification's statement that "the cached information can be sent to a WPS, along with a time tag indicating the time of detection." '455 Patent col.12 ll.37-39. Plaintiff responds that "time tags" are merely an example of time information, see Kotz Dec., Docket # 249-17, at ¶ 116, but does not explain what else the term purportedly includes. Elsewhere, the specification references "logic for caching information indicating the time of reception of the signals transmitted by the corresponding WLAN AP," and in the very next sentence, refers to "cached time information." '455 Patent col.4 ll.19-22. This statement casts doubt on defendant's construction because, read in context, the two sentences appear to describe "cached time information" and "information indicating the time of reception" as synonymous. See Kraft Foods, Inc. v. Int'l Trading Co., 203 F.3d 1362, 1368 (Fed. Cir. 2000) (consulting succeeding sentences to construe term in preceding sentence). Absent better guidance, I conclude that one with ordinary skill in the art would understand the term in such a way.

12. "cached information"

Term	**Court's Construction**

"cached information" ('455/1,4,5,7)	"locally stored identity and time information"

Plaintiff contends that "cached information" means "locally stored identity and time information." Pl.'s Opening Br. at 19. Defendant's proposed construction is narrower in two ways. First, it limits the stored information to "historically observed" data. Second, it limits the kind of stored data to "MAC addresses and time tags." Def.'s Opening Br. at 13-14. The specification teaches that "the list of detected APs along with the time of detection is *saved locally*," and in the very next sentence, refers to this list as "cached information." '455 Patent col.12 ll.35-37 (emphasis added); see Kraft Foods, Inc., 203 F.3d at 1368. This language is consistent with plaintiff's construction.

Moreover, neither of defendant's proposed limitations finds support in the patent's language. The specification states that position estimation may be based on an "instantaneous received signal," id. col.12 ll.55-56, suggesting that "cached information" need not be "historically observed." Furthermore, the patent language does not state or imply that MAC addresses and time tags are the only kinds of information that are cached. To accept defendant's construction would transform these examples into limitations and inappropriately deny plaintiff the "full scope of [its] claims." Kara Tech., Inc. v. Stamps.com, Inc., 582 F.3d 1341, 1348 (Fed. Cir. 2009).

13. "normal data communication"

Term	**Court's Construction**

"normal data communication" ('455/2)	"communication between the device and other access points not occurring during a mode to estimate the position of the device"

Plaintiff construes "normal data communication" to mean "communication between the device and other access points not occurring during a mode to estimate the position of the device." Pl.'s Opening Br. at 21. Defendant argues the term means, "other than beacons, signals sent to or from WLAN APs." Def.'s Opening Br. at 16-17. The parties thus disagree on two points: (1) whether "normal data communication" includes beacons, and (2) whether the term relates to the operation of the WLAN-enabled device or only to WLAN APs.

The patent language supports plaintiff's construction on both points. "A beacon is a signal that is broadcast by WLAN access points periodically and includes the MAC address of the access point." '455 Patent, col.9, ll.58-60. The patent discusses beacons in the context of a "Beacon Detector," an example of a "receive-only" WPS device, which receives signals without first initiating a request for them. Position estimation using a "receive-only" device is one embodiment of the patent. Id. col.8 l.51-col.9 l.2. Defendant's argument thus appears to be that because a "receive-only" device does not conduct normal communication, beacons are not normal, either. Yet the patent expressly says that "the normal operation of a typical WLAN-enabled device . . . decodes beacon broadcast signal[s]." Id. col.12 ll.29-32. Defendant appears to conflate the operation of a Beacon Detector with the transmission of beacons, which the specification describes as a basic function of WLAN APs.

Additionally, the claim language unambiguously states that "normal data communication [occurs] between *the device* and other access points." Id. col.14 ll.20-21 (emphasis added). Defendant's construction, which limits the disputed term to the operation of only the WLAN APs, and not the WLAN-enabled device, is thus incorrect, and defendant appears to acknowledge as much in its brief. Def.'s Opening Br. at 31 ("Consequently, the '*dedicated device*' of the '455 Patent generally receives communications to and from access points . . . .") (emphasis added).

14. "providing extracted and cached information"

Term	**Court's Construction**
"providing extracted and cached information" ('455/1)	"providing information extracted from received WLAN signals and information from the cached information"

Much of the parties' dispute on this term is resolved by my construction of "cached information." The only remaining disagreement is whether a WLAN-enabled device "extract[s]" only MAC addresses from received WLAN signals. Because the specification lists other information that may be extracted, the device is not so limited.[7] See '455 Patent col.13 ll.2-4 (received signal strength indication may be extracted); id. col.13 ll.34-37 (carrier frequency may be extracted).

15. "calculated position information"

[7]Defendant contends that "'extracted information'" means 'information identifying the WLAN APs in range of [the] device.'" Def.'s Opening Br. at 32 (citing '455 Patent col.4 ll.15-17). Because a MAC address is the only way to identify WLAN APs, defendant reasons, "extracted information" must therefore be limited to MAC addresses. But even defendant's own citation to the specification does not support its construction. Although the cited language states that "extracted information" identifies the in-range WLAN APs, it does not say that a MAC address is the only information a WLAN-enabled device can extract.

Term	Court's Construction
"calculated position information" ('657/1)	"position information obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the calculation reduces arterial bias"

I construed "calculated position information" in my claim construction order on the Skyhook I patents.[8] Docket # 96 at 14-17. Defendant contends that my prior construction is binding here. My prior order construed the term as used in the '988 Patent, the parent of the patent-in-suit, the '657 Patent. The two patents share a specification but contain different claims.

Plaintiff asserts there are important differences in the claims which require a new construction of the disputed term. Specifically, the '988 Patent specified a target area "having a radius on the order of ten miles," whereas the '657 Patent specifies no particular distance for the radius of the target area. Compare '988 Patent col.14 l.16, with '657 Patent col.14 ll.19-20. Additionally, the '988 Patent required database records for "substantially all Wi-Fi access points in the target area," whereas the '657 Patent requires records for only "a plurality of Wi-Fi access points in the target area." Compare '988 Patent col. 14 ll.18-19, with '657 Patent col.14 ll.21-22. It makes little sense, plaintiff argues, to require coverage of every street in the target area to collect information about only a plurality of access points.

[8] I construed the term to mean "[e]stimated physical location(s) of Wi-Fi access points calculated using characteristics of signals transmitted by such Wi-Fi access points, which Wi-Fi access points have been collected systematically, i.e., in a manner in which all the streets in the target area have been covered."

When I construed the term in my prior order, I concluded that the '988 Patent disavowed the "Random Model" of data collection in favor of systematic data collection done by covering all streets in the target area, one method of which is known as the "Chinese Postman." Docket # 96 at 16 (citing Honeywell Int'l, Inc. v. ITT Indus., Inc., 452 F.3d 1312, 1320 (Fed. Cir. 2006)). Although its claims contain different requirements than those of its parent, plaintiff cites no evidence that the '657 Patent has retreated from the Chinese Postman method. Indeed, the specification confirms that the Chinese Postman method is still part of the invention that the patent describes. See '657 Patent col.9 ll.26-33; id. Fig. 11 (comparing different methods). My prior construction thus remains appropriate in this new context.

16. "reference symmetry" / "wherein the collection information provides reference symmetry within substantially the entire target area"

Term	Court's Construction
"reference symmetry" ('657/4)	"the distribution of observed Wi-Fi access points within range of a user device's Wi-Fi radio wherein such Wi-Fi access points were obtained by scanning for Wi-Fi access points along every single street in the target area"
"wherein the collection of information provides reference symmetry within substantially the entire target area" ('675/4)	"wherein the collection of information provides reference symmetry within substantially the entire target area relative to a user device"

I construed "reference symmetry" in my prior order. Docket # 96 at 18-20. Plaintiff contends that because Claim 4, in which "reference symmetry" appears, depends on

Claim 1, the differences in claim language between the '657 Patent and its parent apply and a fresh claim construction analysis is required. The '657 Patent copies verbatim the language of the '988 Patent regarding reference symmetry. Compare '657 Patent col.10 ll.9-15, with Docket # 96 at 19 (citing '988 Patent col.9 ll.55-64 ("With [sic] Chinese Postman model of scanning for access points, the user typically encounters a physical location in which there are numerous access point locations on all sides of the user within the range of the device's 802.11 radio. The resulting position calculation has reduced location bias and is more accurate as a result.")). Because the '657 Patent contains the same language as the '988 Patent, and I construed that language to require scanning of every street in the target area, the '657 Patent requires the same comprehensive scanning.

My prior order also resolves the dispute regarding "wherein the collection of information provides reference symmetry within substantially the entire target area." Defendant's construction correctly clarifies, as I previously found, "that the Wi-Fi access points have (or lack) reference symmetry *relative to a user device*." Docket # 96 at 19 (emphasis added). Plaintiff's construction relies on the same arguments it made with respect to the two previous terms, which I previously rejected.

C. Claim Preambles

Whether a claim preamble is limiting is a case-by-case determination, but the Federal Circuit has set forth the guiding principles in American Medical Systems, Inc. v. Biolitec, Inc., 618 F.3d 1354, 1358-59 (Fed. Cir. 2010).

[T]he preamble may be construed as limiting if it recites essential structure

> or steps, or if it is necessary to give life, meaning, and vitality to the claim. A preamble is not regarded as limiting, however, when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention. If the preamble is reasonably susceptible to being construed to be merely duplicative of the limitations in the body of the claim (and was not clearly added to overcome a [prior art] rejection), we do not construe it to be a separate limitation. We have held that the preamble has no separate limiting effect if, for example, the preamble merely gives a descriptive name to the set of limitations in the body of the claim that completely set forth the invention.

Id. at 1358-59 (second alteration in original) (quotations and citations omitted). Defendant contends that fourteen claim preambles give essential structure and context that is necessary to understand the terms in the associated claims.

Plaintiff correctly points out that the relevant claims "describe structurally complete inventions." Pl's Opening Br. at 39. The claims define the relevant invention sequentially; each described action builds upon the action the claim previously described. Although the preambles describe the purpose of the inventions, the Federal Circuit has ruled that such preambles are not limiting because they are "reasonably susceptible of being construed as duplicative of the limitations in the body of the claim." Am. Med. Sys., Inc., 618 F.3d at 1359 (quotation and citation omitted); see IMS Tech., Inc. v. Haas Automation, Inc., 206 F.3d 1422, 1434 (Fed. Cir. 2000) (stating preamble not limiting if it "merely gives a descriptive name to the set of limitations in the body of the claim that completely set forth the invention"); Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999) (noting preamble which states "the purpose or intended use of the invention" is not limiting). For this reason, the preambles are "irrelevant to proper construction of the claim." IMS Tech., Inc., 206 F.3d at 1434.

IV. Conclusion

For the reasons stated above, defendant's motion for partial summary judgment of invalidity for indefiniteness (Docket # 240) is ALLOWED with respect to U.S. Patent Nos. 8,019,357 and 8,022,877 and DENIED with respect to U.S. Patent Nos. 7,856,234 and 8,229,455. Defendant's motion for sanctions (Docket # 175) is DENIED. Defendant's motion to bifurcate liability from damages for trial and discovery (Docket # 281) is DENIED. The court will hold a scheduling conference on April 17, 2014, at 2:30 p.m.

March 6, 2014
DATE

/s/Rya W. Zobel
RYA W. ZOBEL
UNITED STATES DISTRICT JUDGE